

ABSTRACT

The object of the present invention is to provide an α -isomaltosylglucosaccharide-forming enzyme, process of the same, cyclotetrasaccharide, and saccharide composition comprising the saccharide which are obtainable by using the enzyme; and is solved by establishing an α -isomaltosylglucosaccharide-forming enzyme which forms a saccharide, having a glucose polymerization degree of at least three and having both the α -1,6 glucosidic linkage as a linkage at the non-reducing end and the α -1,4 glucosidic linkage other than the linkage at the non-reducing end, by catalyzing the α -glucosyl-transfer from a saccharide having a glucose polymerization degree of at least two and having the α -1,4 glucosidic linkage as a linkage at the non-reducing end without substantially increasing the reducing power; α -isomaltosyl-transferring method using the enzyme; method for forming α -isomaltosylglucosaccharide; process for producing a cyclotetrasaccharide having the structure of $\text{cyclo}\{-6\}\text{-}\alpha\text{-D-glucopyranosyl-(1}\rightarrow\text{3)-}\alpha\text{-D-glucopyranosyl-(1}\rightarrow\text{6)-}\alpha\text{-D-glucopyranosyl-(1}\rightarrow\text{3)-}\alpha\text{-D-glucopyranosyl-(1}\rightarrow\text{)}$ using both the α -isomaltosylglucosaccharide-forming enzyme and the α -isomaltosyl-transferring enzyme; and the uses of the saccharides obtainable therewith.